REMARKS

The Office Action dated July 20, 2009 has been reviewed, and the comments of the U.S. Patent Office have been considered. According to the Office Action, the drawings stand objected under 37 CFR 1.83(a) and claims 1-11, 14, 15, 62, and 65-74 stand rejected under 35 U.S.C. 112. Claims 1-11, 14, 15 and 20-74 are currently pending, claims 1-11, 14, 15, 20-54 and 62-74 stand rejected, and claims 55-61 stand withdrawn. Claims 1, 14, 20, 24-26, 28-29, 31, 42, 46-48, 50, 63, 65-74 have been amended. Reconsideration of this application in view of the above amendments and the arguments presented below is respectfully requested.

Claims 1-11, 14, 15, 20-54, 62 and 64-74 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,296,816 to Fischer ("Fischer") in view of U.S. Patent No. 5,810,263 to Tramm ("Tramm"). Claims 63 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer in view of Tramm, U.S. Patent No. H121 to Pieczykolan ("Pieczykolan") and U.S. Patent No. 5,727,737 to Bosio et al. ("Bosio"). In view of the amendments to the claims, applicants respectfully submit that a *prima facie* case of obviousness cannot be established because Fischer alone or in combination with Tramm, Pieczykolan and/or Bosio fails to show, describe, teach or suggest each and every feature of the claimed invention.

Applicants have further amended independent claims 1, 20, 24, 25, 42, 45-48, 50, and 63 to particularly point out the subject matter of the invention. In particular, claim 1 has been amended to recite, an extended coverage sidewall automatic fire sprinkler comprising, among other features, a tubular body with a central passageway and a central axis and a deflector at a discharge end of the sprinkler:

> the deflector being symmetrical about an imaginary vertical plane passing through the central axis, the deflector including a first arm, a second arm and a generally planar face portion generally orthogonal to the central axis ***the face portion***

> ***having an opening consisting of a circular opening*** axially aligned with the center axis and engaged with a portion of the body to space the face portion from the outlet , the deflector being further divided by an imaginary horizontal plane passing through the central axis and orthogonal to the vertical plane, the face portion further including an upper edge above the horizontal plane and a lower edge that extends parallel to and below the horizontal plane perpendicular to the vertical plane, the face portion having a bottom center extending below the horizontal plane and centrally axially aligned along the vertical plane with the circular opening so as to locate the lower edge as a portion of the deflector most remotely below the horizontal plane, ***the deflector further including a canopy portion spaced from the upper edge of the upper face portion so as to define a single opening in the deflector*** for fluid to pass through

Amended Claim 1 (emphasis added). Independent claims 20, 24, 25, 42, 45-48, 50, and 63 have been similarly amended so as to be directed to a sidewall automatic fire sprinkler (claim 50 being directed to a fire protection system comprising at least one sprinkler), in which the sprinkler comprises, among other features, a tubular body with an axis forming an outlet, and a deflector which is:

> symmetrical about an imaginary vertical plane and divided by an imaginary horizontal plane that is orthogonal to the vertical plane, the axis defining the intersection between the vertical and horizontal planes, the deflector further including a first arm, a second arm and a face portion oriented generally perpendicular with respect to the axis, ***the face portion having an opening consisting of a circular opening . . . to support the face portion spaced from the outlet***, the face portion having an upper edge located above the horizontal plane and a lower edge located below the horizontal plane extending parallel to the horizontal plane and perpendicular to the vertical plane, the face portion having a bottom center extending below the horizontal plane centrally axially aligned with the circular opening along the vertical plane so as to locate the lower edge as a portion of the deflector most remotely below the horizontal plane, ***the deflector further including a canopy portion . . . spaced from the upper edge . . . to define a single opening of the deflector through which water can pass***

The amendments to each of independent claims 1, 20, 24, 25, 42, 45-48, 50, and 63 are supported by the application as filed, for example, from page 8, line 5 to page 11, line 4, FIGS. 3-11. Based upon the scaled figures and associated text of the application as filed, the specification has been amended as provided above. Both marked-up and unmarked versions of the replacement

and amended specification paragraphs is provided to show the changes. In the July 20, 2009 Office Action, the Examiner objected to the drawings. Attached are replacement drawing sheets with amended FIG. 5 showing the features of the deflector as now claimed in the amended claims 1, 20, 24, 25, 42, 45-48, 50, and 63. The annotated drawing sheet shows the changes made to FIG. 5.

Applicants submit that none of the cited references: Fischer, Tramm, Pieczykolan, and Bosio, whether taken alone or in combination, show, describe, teach or suggest each and every feature of the sprinkler and its deflector as now claimed. In particular, Fischer does not have a deflector with a face portion having an opening "consisting of a single opening." Rather, the deflector of Fischer has a face portion with multiple openings. More specifically, Fischer shows in FIG. 3 and FIG. 5, a face portion 76 of the deflector (as identified by the Examiner) having two slots 77 disposed about the central hub 60 of the Fischer deflector. *See* Fischer, FIG. 3. Because the Fischer deflector has two slots in the face portion 74, Fisher fails to have a face portion having an opening "consisting of a circular opening" as claimed. Tramm, Pieczykolan and Bosio fail to cure the deficiency of Fischer so as to reach the claimed invention as a whole.

Additionally, because Fisher has two slots 77 in its deflector that are described as, "[l]ong rectangular slots 77 [that] distribute water onto the immediate floor area," Fischer fails to show or describe "a single opening of the deflector through which water can pass" as is recited in each of independent claims 1, 20, 24, 25, 42, 45-48, 50, and 63. Again, neither Tramm, Pieczykolan nor Bosio cure the deficiency of Fischer so as to reach the claimed invention as a whole.

The amended claims recite additional features that are not present in the applied references. For example, each of the amended claims 1, 20, 24, 25, 42, 45-48, 50, and 63 recites that the face portion of the deflector has an upper edge and a lower edge located below an

imaginary horizontal plane that extends parallel to the horizontal plane and perpendicular to an imaginary vertical plane. The amended claims further provide that the face portion has a bottom center extending below the horizontal plane "so as to locate the lower edge as a portion of the deflector most remotely below the horizontal plane." Neither Tramm nor Fischer have a face portion with a "lower edge" and "bottom center" as claimed. Instead, each of the deflectors of Tramm and Fischer have a slot in the region beneath the horizontal plane and centrally aligned along the vertical plane. *See* Fischer, col. 3, lines 5-7, FIG. 5 ("slot 80"); *see also* Tramm, FIG. 3. Accordingly, neither Fischer nor Tramm have a "bottom center" in its face portion that extends beneath the horizontal plane "so as to locate the lower edge as a portion of the deflector most remotely below the horizontal plane." Rather the "face portions" of both Fischer and Tramm have off-center regions that locate a lower edge portion most remotely from a horizontal plane of the deflector. Pieczykolan and Bosio fail to cure the deficiency of Fischer so as to reach the claimed invention as a whole. Withdrawal of the claim rejections is respectfully requested.

In addition to the arguments for patentability above, applicants maintain that the rejections are traversed for reasons already of record. In particular, to support the obviousness rejection, the Examiner asserts throughout the Office Action that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sprinkler of Fischer with the purported teachings of Tramm. The Examiner's proposed combination of references was made having apparently considered, yet finding unpersuasive, the Declaration of Michael A. Fischer, filed October 6, 2004, in which Mr. Fischer states that he (as one of more than ordinary skill in the art and inventor of the sprinkler of Fischer) would, at the time the invention was made, not have known how to modify the sprinkler shown and described in Fischer with the teachings of Tramm to reach applicants' invention. Applicants therefore

maintain that a person of ordinary skill would not have been suggested, motivated or had an identified reason to modify the sprinkler shown and described in Fischer with the teaching of Tramm, as proposed by the Examiner, to reach the claimed invention as a whole so as to support a prima facie case of obviousness.

Applicants, again respectfully remind the Examiner, "[t]he mere fact that the references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art" MPEP 2143.01 Pt. III at 2100-128 to 2100-140. As has been previously noted, Tramm seeks to distinguish itself from Fisher. Tramm cites Fischer as an illustrative horizontal-type sprinkler. *See* Tramm, col. 1, lines 35-43. Tramm describes typical horizontal-type sprinklers as having substantially horizontal flow confining elements in which the confining surface is located "downstream (forward)" of the deflector mounting boss. *See id.*, col. 1, lines 35-43; col. 3, lines 33-37. Tramm, in contrast, describes a sprinkler having a deflector "rearward" of the deflector mounting boss to improve the over-all appearance of Tramm's sprinkler over "conventional technology horizontal-type sprinkler deflectors." *See id.*, col. 8, lines 13-23. In view of this difference or conflicting teaching between Tramm and Fischer, the Examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art in the obviousness analysis, considering the extent to which one might accurately discredit another. MPEP 2143.01 Pt. II at 2100-139. Applicants submit that the contrasting teachings between Tramm and Fischer weigh against their combination as proposed by the Examiner.

A prior art reference must be considered in its entirety, including portions that lead away from the claimed invention. MPEP 2141.03 Pt. IV at 2100-126. Where the claims of the instant application are directed to a sprinkler having a forward facing deflector, Tramm teaches away

from the claimed invention. Tramm specifically teaches a deflector in which, "the substantially horizontal flow containing element 48 is substantially rearward of deflector mounting surface 25 of deflector mounting boss 26." *See* Tramm, col. 8, lines 13-16. Applicants submit that none of the cited references: Fischer, Tramm, Pieczykolan, and Bosio, whether taken alone or in combination, show, describe, teach or suggest applicants' invention as a whole or provide an identifiable reason for their combination, and therefore, for at least the above reasons of record, the pending claims are patentable over the cited art.

Claims 1, 20, 24, 25, 42, 45-48, 50 and 63 have been further amended to recite a sidewall automatic fire sprinkler comprising, among other features, a deflector having a first arm, a second arm and a canopy portion having a free end defining a linear profile extending the entire length between the first and second arms "parallel to the horizontal plane." Applicants submit that Fischer, whether taken alone or in combination with Tramm, Pieczykolan or Bosio (in the absence of an identified reason for such a combination), fails to show or describe or otherwise teach or suggest a deflector having a canopy portion with a free end as claimed. Instead, the deflector plate 38 of Fischer has a canopy or confining element 62 extending outward horizontally (perpendicular to the vertical plane of the hub). *See* Fischer at col. 3, lines 18-20, FIG. 3. According to Fischer, "[t]he confining element [62] is upwardly deformed at its downstream center to form channel 90, which extends upstream from downstream end 91 of element 62." *See id.* at col. 3, lines 23-25, FIGS. 3 &4 (emphasis added). Accordingly, Fischer does not show or describe the claimed canopy portion having a free end defining a linear profile extending between a first arm and a second arm "parallel to the horizontal plane." Moreover, to the extent any one of Tramm, Pieczykolan or Bosio show or describe a canopy portion having a free end with a linear profile extending between a first and second arm, there is no suggestion or

motivation to modify Fischer with such a teaching because to do so would change the principle of operation of Fischer.

According to Fischer, "[c]hannel 90 functions as a Coanda effect surface. . . . [I]t actually lifts upward the central stream, which is traveling horizontally (parallel to the undersurface of element 62)." *See* Fischer at col. 4, lines 24-32. Thus, to modify the deflector plate 38 of Fischer to have a canopy portion with a free end defining a linear profile as claimed, would change the principle of operation of Fischer, and therefore there is no teaching or suggestion to do so. *See* MPEP 2143.01, Pt. VI at 2100-141. ("If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teaching of the references are not sufficient to render the claims *prima facie* obvious). Because Fischer alone or in combination with Tramm, Pieczykolan or Bosio (in the absence of an identified reason for such a combination) fails to teach or suggest the claimed deflector and therefore fails to teach or suggest the invention as whole, a *prima facie* case of obviousness cannot be established. *See* MPEP 2143.01 at 2100-141. Applicants respectfully request withdrawal of the rejections of claims 1, 20, 24, 25, 42, 45-48, 50 and 63.

The Examiner argues that Fischer "discloses that with channel 90 cut away along boundary 95, 'the sprinkler performed much the same as it did with no channel and an entirely flat confining element.'" *See* Detailed Action at 9, para. 7 (citing Fisher at col. 4, lines 33-37). With regard to its channel 90, Fischer more specifically states:

> Channel 90 functions as a Coanda effect surface; the central portion of the stream remains attached to the undersurface of the channel, and is thereby lifted upward. The channel does not function like a notch cut in element 62 to merely permit a stream already travelling in an upwardly inclined direction to continue along its trajectory. Instead it actually lifts upward the central stream, which is travelling horizontally (parallel to the undersurface of element 62). Experiments confirm this conclusion. When a sprinkler was tested with element 62 cut away along

> boundary 95, ***the improved performance achieved with the channel was not repeated. Instead the sprinkler performed much the same as it did with no channel and an entirely flat confining element.***

Fischer, col. 4, lines 24-37 (emphasis added). To reiterate, it is applicants' position that to modify the canopy of Fischer with a free end as claimed would alter the principle of operation of Fischer such that there can be no teaching or motivation to make such a modification in order to establish a *prima facie* case of obviousness. *See* MPEP 2143.01 at 2100-141 (Rev. 5, Aug. 2006). Thus, the description in Fisher, contrary to the Examiner's understanding of the passage, supports applicants' argument that modifying the Fischer canopy with a free end as claimed alters the principal of operation of Fischer's sprinkler such that the sprinkler fails to repeat the "improved performance" of the Fischer sprinkler with the channel 90. Accordingly, the Examiner's proposed combination/modification of teachings of Fischer, Tramm, Pieczykolan or Bosio are insufficient to render the claims *prima facie* obvious.

Applicants submit that, in view of the above amendments and remarks, the cited references: Fischer, Tramm, Pieczykolan, and Bosio, whether taken alone or in combination, fail to show, describe, teach or suggest each and every feature of the claimed inventions so as to reach applicants' invention as a whole. Therefore, at least amended independent claims 1, 20, 24, 25, 42, 45-48, 50, and 63 and the claims depending therefrom are patentable over the cited references.

With regard to the rejection of independent claim 64, the Examiner alleges that the claimed "means for dispersing" fails to invoke means-plus-function language falling within 35 USC 112, sixth paragraph because the claimed means is purportedly "modified by sufficient structure, material, or acts for achieving the specified function" so as not meet the third prong of the §112, sixth paragraph analysis. *See* Detailed Action at 8. Applicant respectfully disagree.

Independent claim 64 is directed to an extended coverage sidewall automatic sprinkler comprising, among other features,

> means for dispersing water discharged horizontally from the outlet into a spray pattern of water droplets over a generally horizontal, generally rectangularly-shaped extended coverage area of more than one hundred square feet located on one side of the sprinkler effective to control an ordinary hazard fire in the coverage area and at an average density of about 0.15 gallons per minute per square feet when the sidewall fire sprinkler is paired with an identical sidewall fire sprinkler mounted approximately sixteen feet apart on a generally planar wall surface, the collection area being approximately sixteen feet between the sprinklers and sixteen feet away from one of the sprinklers, the collection area being located at either one of a distance of about thirty-six inches and a distance of approximately six feet and 7.5 inches below each of the sidewall fire sprinklers.

Applicants submit that the claimed means is not modified by sufficient structure, materials or acts for achieving the specified function of "dispersing." Rather, the recited structure modifies the coverage area in which the specified "dispersing" takes place. Accordingly, claim 64 and its "means for dispersing" satisfies the third prong of the means-plus-function analysis so as to invoke §112, sixth paragraph. Application of a prior art reference in the examination of a means-plus-function claim limitation requires that the applied prior art element perform the identical function specified in the claim. *See* MPEP 2183. If the prior art reference teaches identity of function, the Examiner then has the initial burden of proof for showing that the prior art structure or step is the same as or equivalent to the structure, material, or acts described in the specification which has been identified as corresponding to the claimed means or step plus function. *Id.* Having incorrectly concluded that claim 64 does not invoke 35 U.S.C. 112, sixth paragraph, applicants maintain that the Examiner has not satisfied this initial burden of proof, and therefore the Examiner has not demonstrated that the applied prior art performs the identical

function in the claim or that the prior art is the same or equivalent to the structure in applicants' specification corresponding to the claimed means.

Applicants maintain that Fischer does not show or describe any specific water density in gallons per minute per square feet to be provided over a protection area. Thus, Fischer does not show or describe the claimed function, and thus, Fischer is not an applicable reference in the examination of claim 64. However as previously noted, Tramm does describe at col. 2, lines 6-17 "standards or guidelines" used by each listing organization for evaluating horizontal-type sprinklers which include, "established requirements for: minimum amount of water which must be collected, per unit time, in specified areas (i.e. density) under and between the sprinklers." To the extent this description in Tramm provides the identity of the claimed functional limitation, applicants contend that Tramm does not show or describe structure that is the same or equivalent to structure described in applicants' specification corresponding to the claimed function.

As previously identified for the Examiner, applicants' specification as originally filed discloses at least a deflector 40, 140 as structure corresponding to the claimed means. Shown in applicants' FIG. 7 as originally filed, for example, is the canopy portion 144 of the deflector 140 extending distally from the outlet of the sprinkler. In contradistinction, Tramm shows a deflector 22 as being rearward facing. i.e. the flow containing element 48 of the deflector 22 is substantially rearward the deflector mounting surface. *See* Tramm, col. 8, lines 13-18, FIGS. 1 and 3. Arguably, Tramm's rearward facing deflector and applicants' disclosed "forward" facing deflector are neither the same nor the equivalent. Specifically, Tramm distinguishes its rearward facing deflector from "conventional horizontal-type deflectors" by noting that the rearward facing deflector provides for a deflector with an over-all reduced length, which according to Tramm is "less obtrusive, especially when mounted inside of a recessed escutcheon." *Id.*

Because Tramm fails to show or describe structure that is the same or equivalent to applicants' structure that corresponds to the claimed means, Tramm alone, at the least, fails to satisfy the requirement of the means-plus-function claim limitation.

To the extent that the Examiner believes that the hypothesized combination of Fischer in view of Tramm provides the claimed function and further teaches or suggests structure that is the same or equivalent to the structure described in applicants' specification corresponding to the claimed means, this argument cannot stand. As discussed above, there is no motivation, suggestion or identified reason to combine these references, and the references, singularly or in combination, fail to teach or suggest the claimed invention as a whole. Accordingly, applicants respectfully submit that claim 64 is patentable, and because of their dependencies from claim 64, claims 65-74 are also patentable. Furthermore, claims 65-74 recite structural features which are: (1) a forward facing canopy, i.e. away from the outlet and towards a free end, as recited in claims 65, 66, 68, 69, 70, 74; (2) a generally flat canopy surface for deflector, as recited in claims 67, 68, 71; and (3) a deflector that has only a single flow opening, as recited in claims 67, 72, 73. Accordingly, the combination of Fischer and Tramm fails to teach or suggest applicants' invention claimed in claims 65-74 as a whole.

DRAWING AND 35 U.S.C. 112 REJECTIONS

According to the Office Action, the drawings stand objected to under 37 CFR 1.83(a) for allegedly failing to show each feature of the invention specified in the claims. Claims 67, 72-73 stand rejected under 35 U.S.C. 112, first paragraph as allegedly failing to comply with the written description requirement. Claims 1-11, 14, 15, 62, 65-74 also stand rejected under 35 U.S.C. 112, second paragraph, as purportedly failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. The objections to the drawings and

the rejections of the claims under 35 U.S.C. 112, first and second paragraph are believed to be overcome in view of the submitted replacement drawings and the amendments to the specification and claims. Withdrawal of the objections and drawings is respectfully requested.

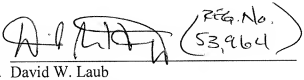
CONCLUSION

In view of the foregoing amendments and remarks, applicants respectfully request reconsideration of this application and the prompt allowance of at least claims 1-11, 14-15, 20-54, and 62-74. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the undersigned to expedite prosecution of the application.

The Commissioner is hereby authorized by this paper to charge any fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-2283. **This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).**

Date: November 26, 2009

Respectfully submitted,



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